



Vistachrom 1.6



- Vistachrom = software used to :
 - Control an instrument (GC, sensor...) with sequences, methods, substance tables, ...
 - Chromatograms automatic recording, « .Chrom » and « .Asc » files
 - Sequence, methods programming
 - Visualization of the results :
 - Chromatograms
 - Concentrations, retention times, areas of the peaks, ...
 - Tools available to calculate statistics on the data : BS, RT stability, ...
 - Post-processing of the results
 - Data transfert via Modbus / 4-20 mA outputs...
 - And also : « presets » : factory settings of the instruments



If you want to practice and install an « offline » software version on your computer, ask Chromatotec.

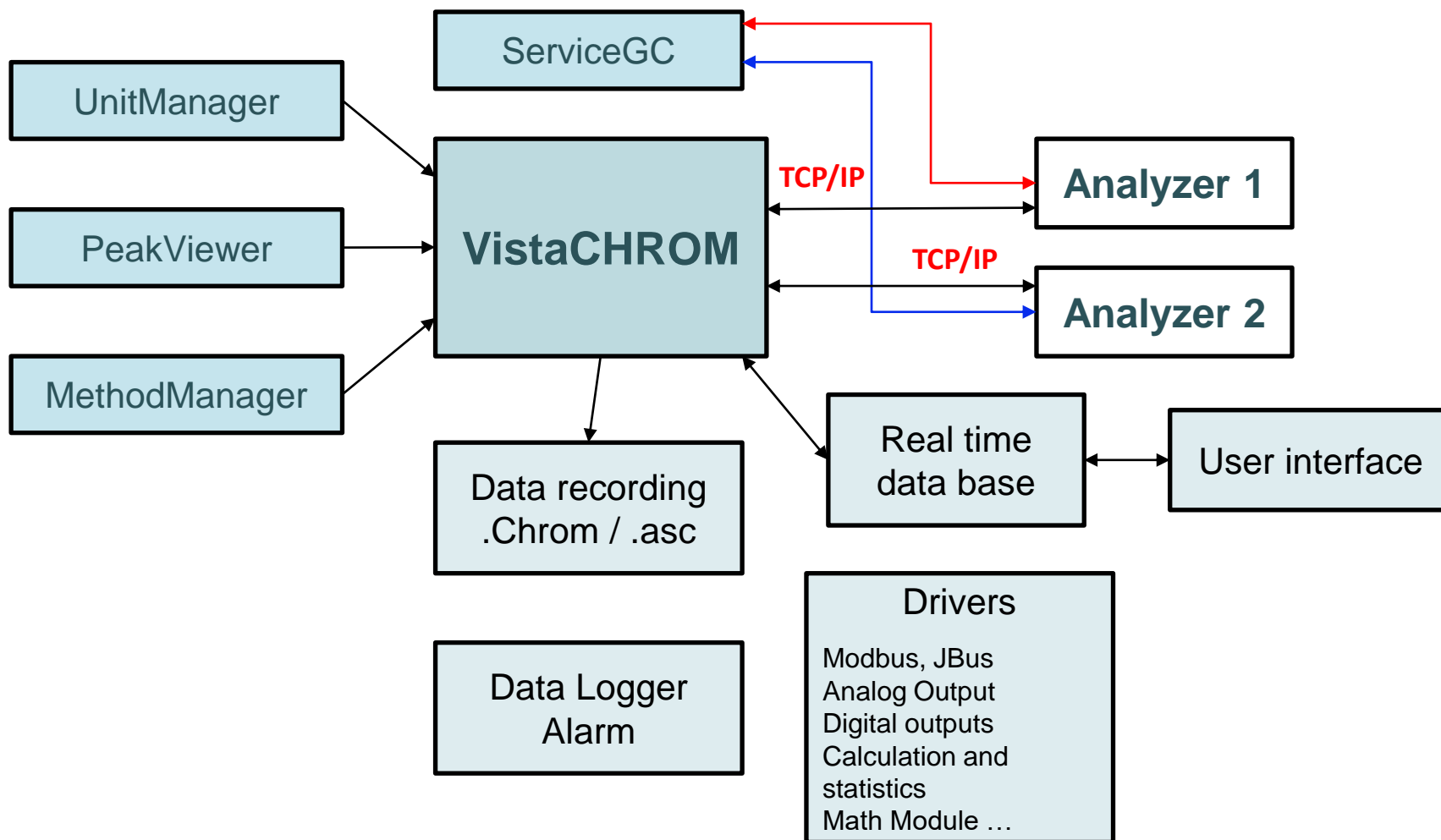
Vistachrom 1.6



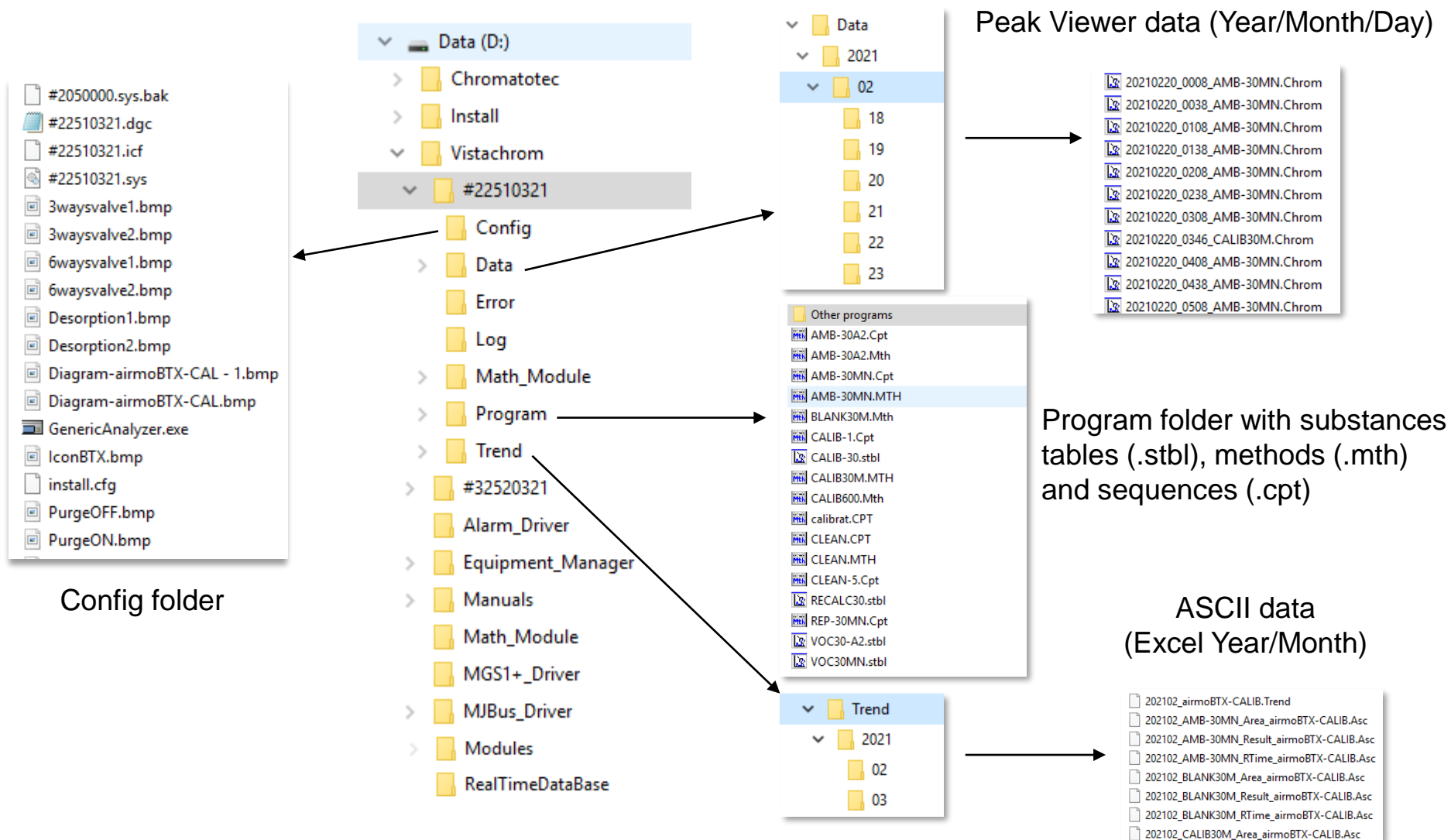
Online Gas and Liquid Analyzer Experts

1. Organisation of VistaCHROM 1.6
2. Synoptic of the analyzer
3. Method Manager
4. Set up the GC
5. Soft configuration
6. Peak Viewer
7. Unit Manager
8. Service GC
9. Generators
10. Software drivers

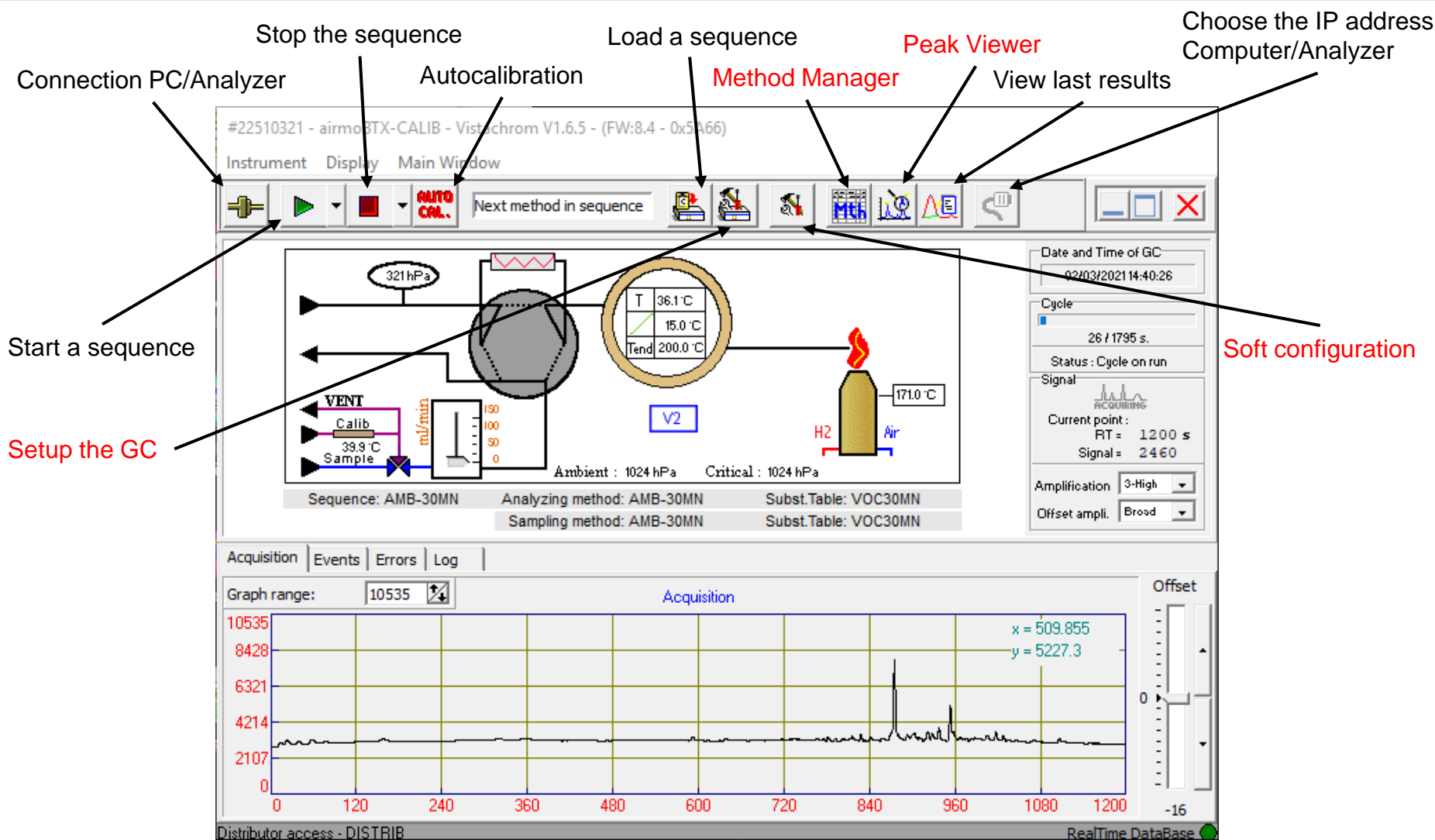
1- Organisation of Vistachrom



1- Organisation of Vistachrom

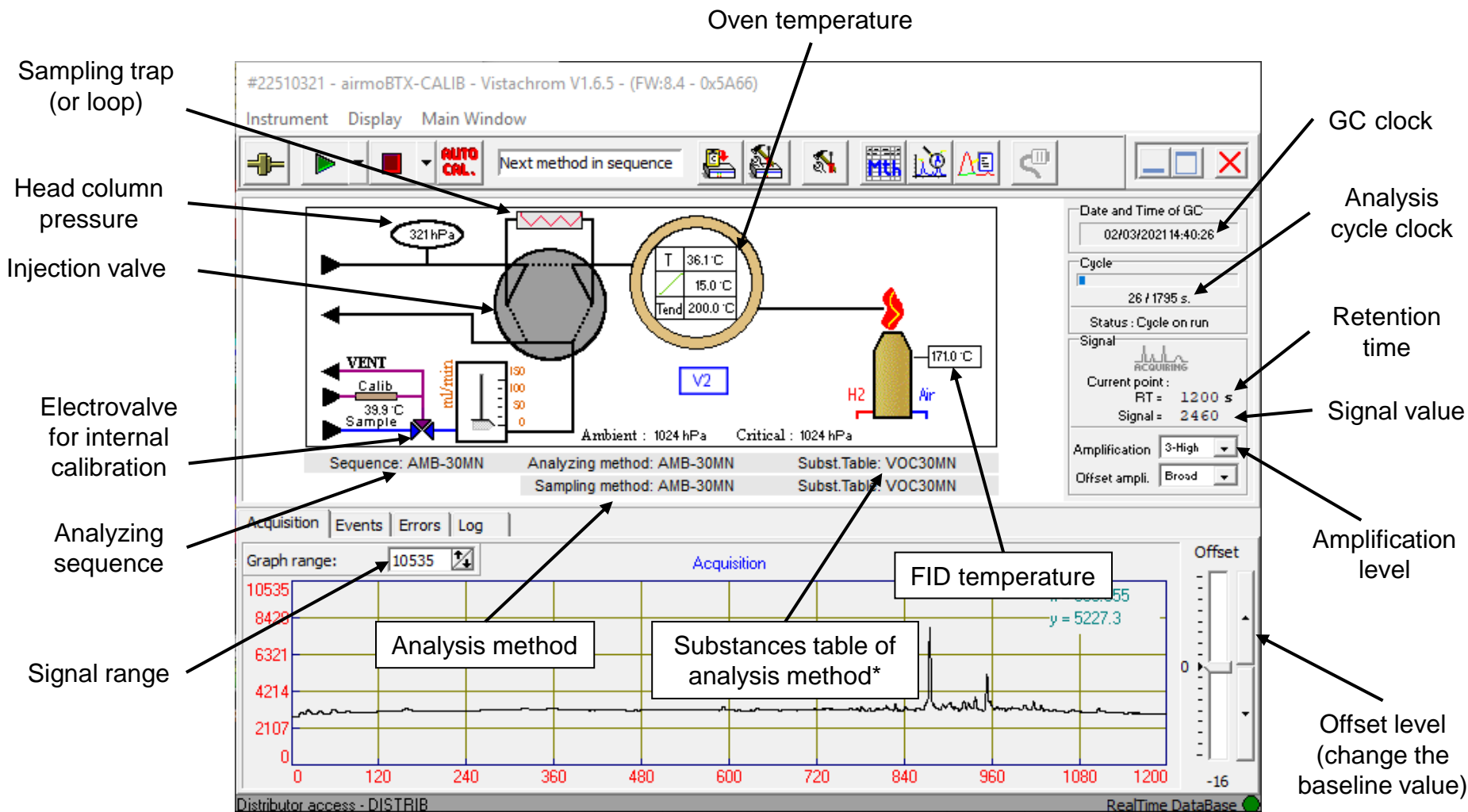


2- Synoptic of the analyzer



2- Synoptic of the analyzer

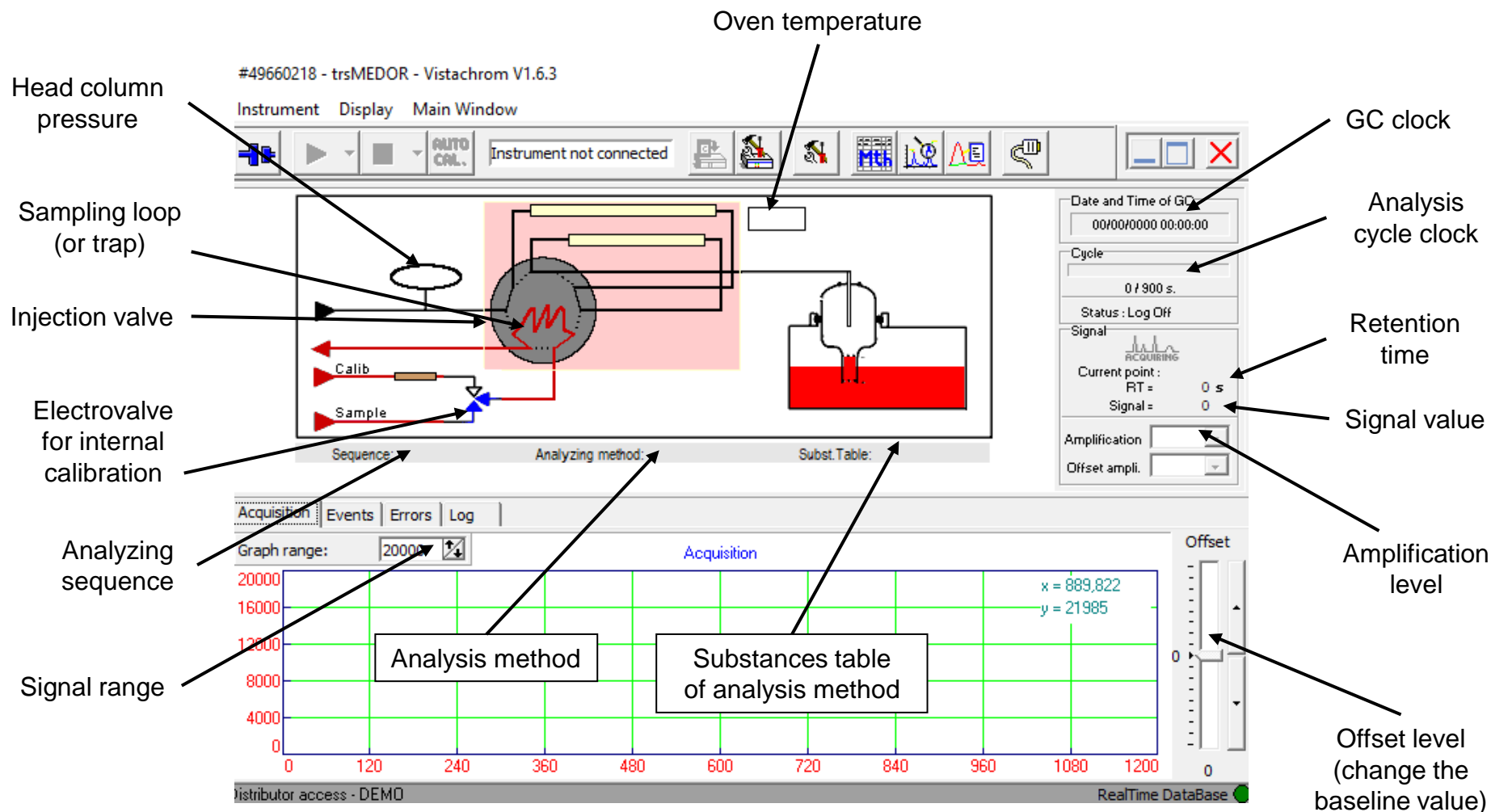
BTEX analyzers



* Double click to open directly substances table

2- Synoptic of the analyzer

MEDOR® analyzers

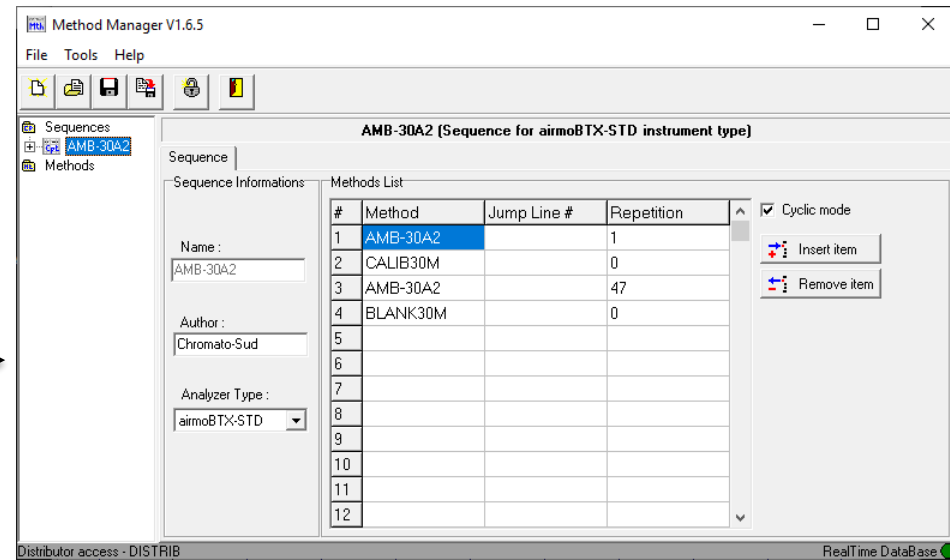
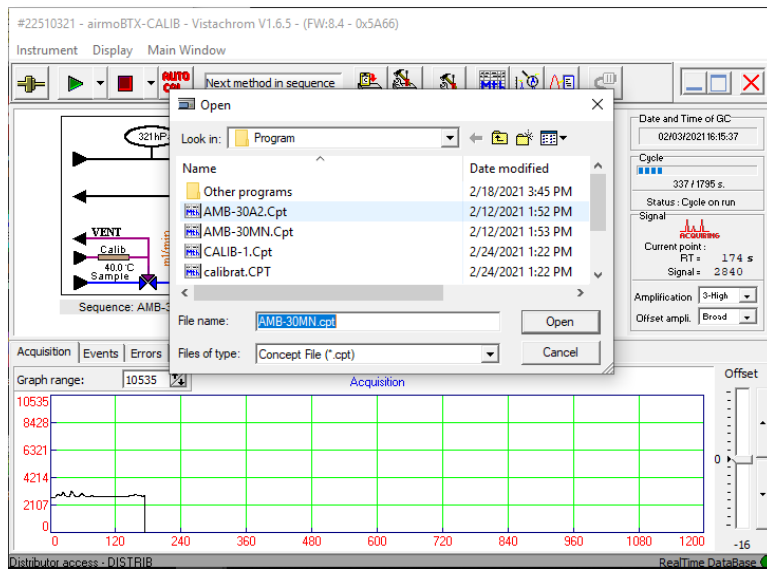


3- Method Manager

General presentation



- Allow you to see, create or modify :
 - Sequences
 - Methods
 - Substances tables

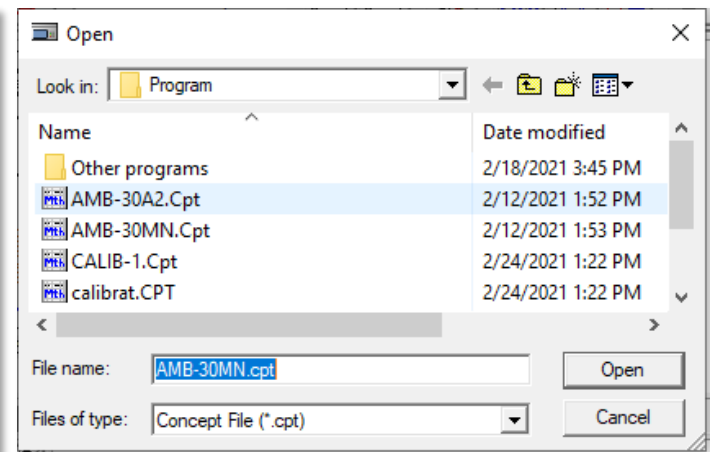
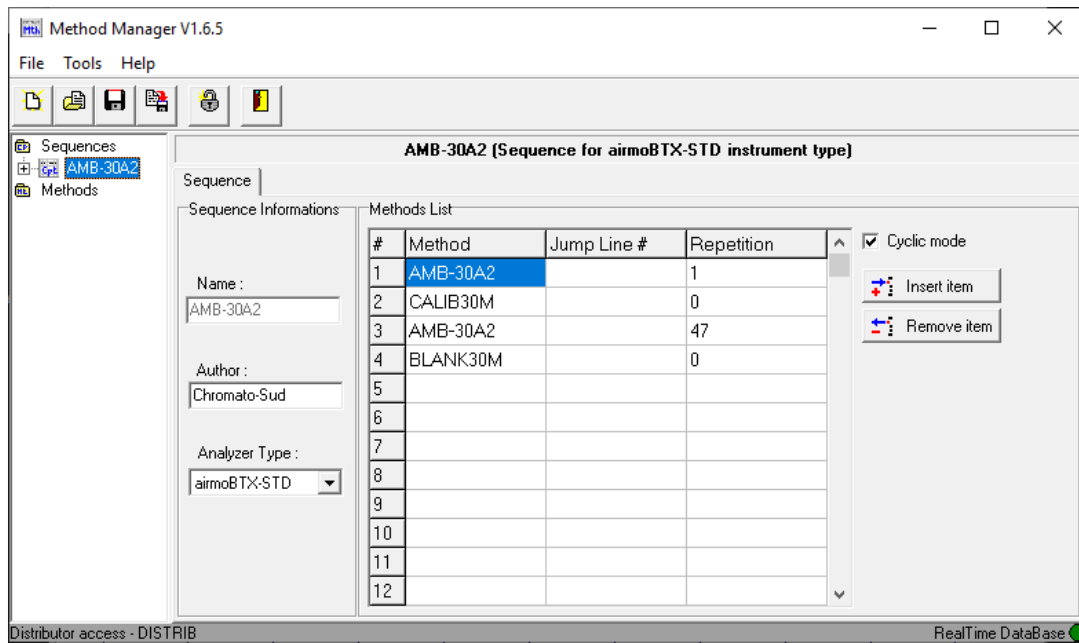


3- Method Manager

Sequence



- You can modify the sequences: adding or removing methods which already exist.



4 – Save the sequence: File Save As...

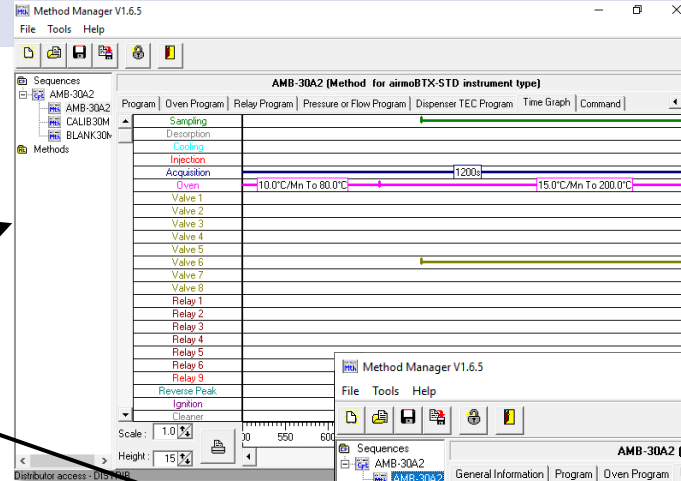
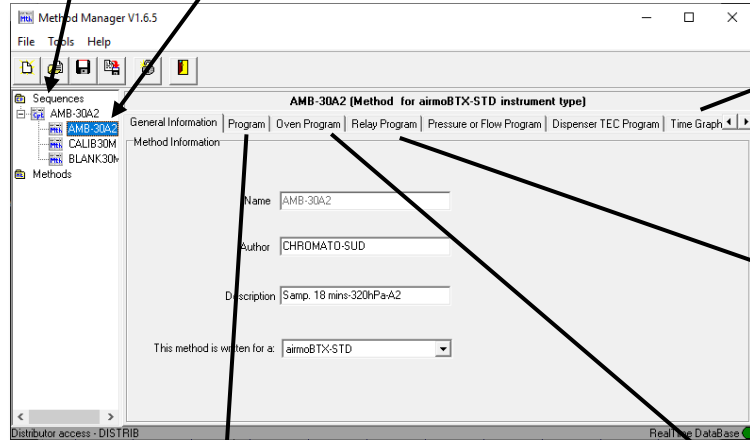
- 1 – Double click to choose a method
- 2 – Choose the number of methods
- 3 – Click on "INSERT" to validate

3- Method Manager

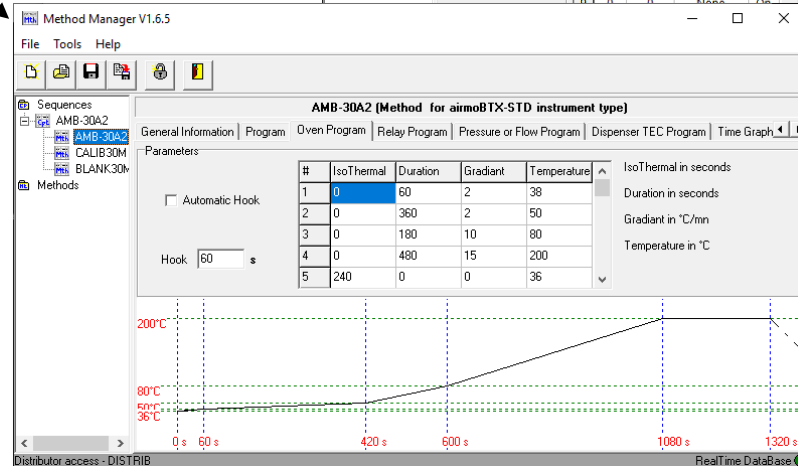
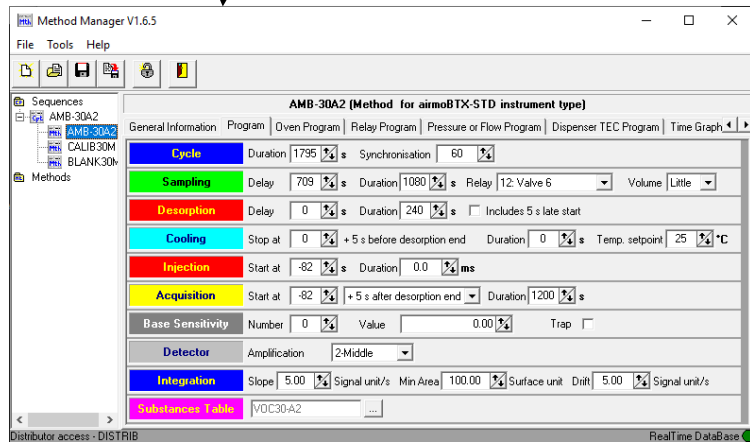
Method



Sequence Choose a method into the sequence



#	Time	Duration	Relay	State
1	0	0	Valve 1	On
2	0	0	Valve 2	On
3	0	0	Valve 3	On
4	0	0	Valve 4	On
5	0	0	None	On
6	0	0	None	On
7	0	0	None	On
8	0	0	None	On
9	0	0	None	On
10	0	0	None	On
11	0	0	None	On
12	0	0	None	On



3- Method Manager



Substance table : **linear** → For AirmoVOC, AirmoBTX, Medor...

Method Manager V1.6.5

File Tools Help

Sequences

- REP15-A1
- AMB15-1
- CAL15-A1
- ZERO15-1

Methods

AMB15-1 (Method for chroma 5 instrument type)

General Information Program Oven Program Relay Program Pressure or Flow Program Dispenser TEC Program Time Graph

Cycle Duration 895 s Synchronisation 60

Sampling Delay 649 s Duration 240 s Relay 0: No relay Volume Little

Desorption Delay 0 s Duration 120 s Includes 5 s late start

Cooling Stop at 0 + 5 s before desorption end Duration 0 s Temp. setpoint 25 °C

Injection Start at -30 s Duration 0.0 ms

Acquisition Start at -30 + 5 s after desorption end Duration 750 s

Base Sensitivity Number 0 Value 0.00 Trap

Detector Amplification 1-Low

Integration Slope 5.00 Signal unit/s Min Area 1000.00 Surface unit Drift 10.00 Signal unit/s

Substances Table RSH15-1

Distributor access - DISTRIB

Time retention window

Response factors

Function used for results

RealTime DataBase

Substances table information

Substances table name VOC30-A2 Author Chromato-Sud

For the analyzer serial number #22510321 Analyzer type airmoBTX-CALIB

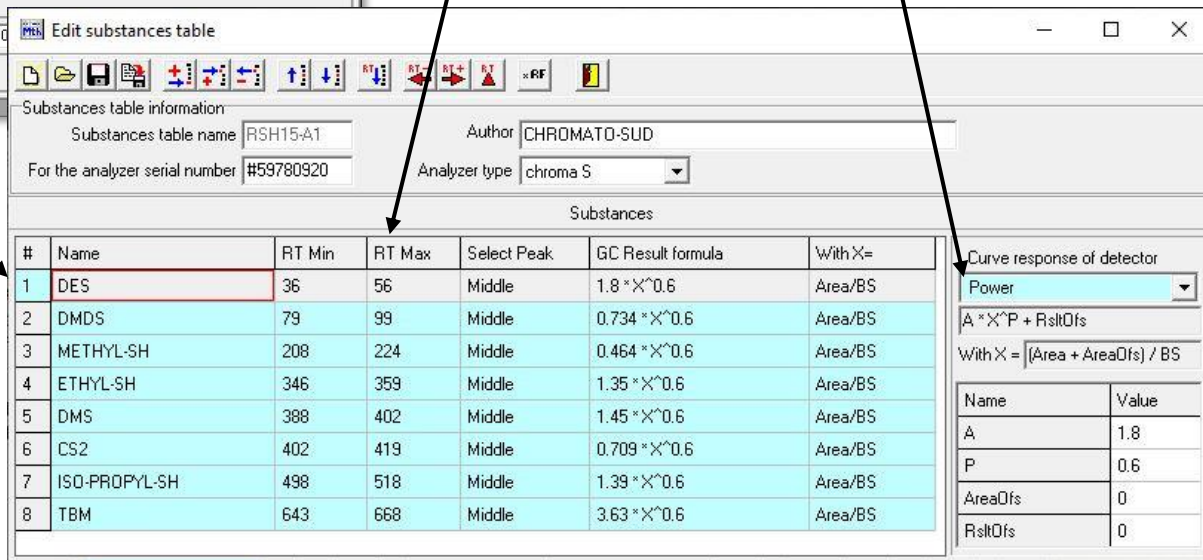
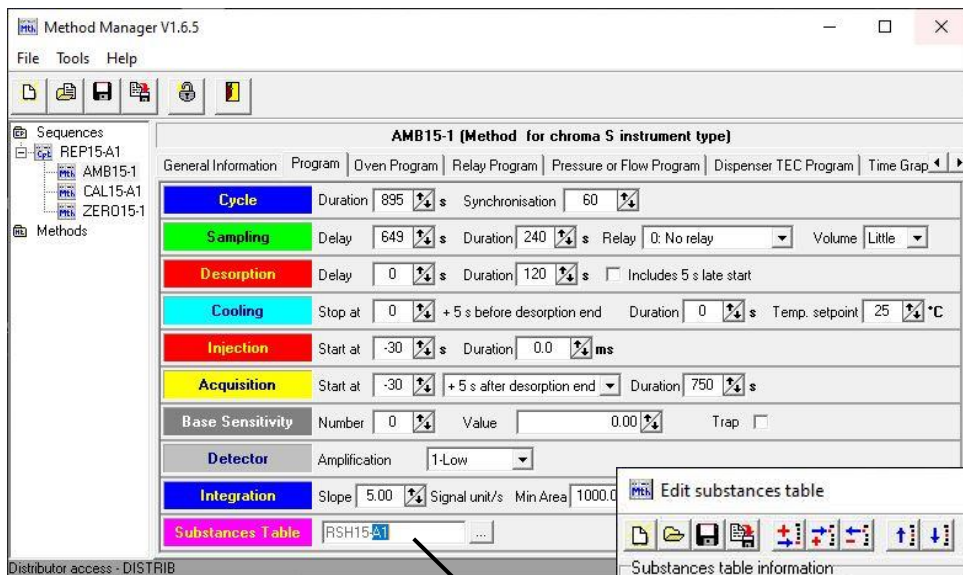
Substances

#	Name	RT Min	RT Max	Select Peak	GC Result formula	With X=	Curve response of detector
1	1,3-BUTADIENE	15	25	Middle	9.3 * X	Area/BS	Linear
2	BENZENE	312	322	Middle	10 * X	Area/BS	Factor * X
3	CYCLOHEXANE	334	344	Middle	11 * X	Area/BS	With X = (Area + AreaOfs) / BS
4	TOLUENE	587	597	Middle	10.5 * X	Area/BS	Name
5	ETHYLBENZENE	757	767	Middle	11 * X	Area/BS	Value
6	M&P-XYLENES	770	780	Middle	11 * X	Area/BS	Factor
7	STYRENE	795	805	Middle	11 * X	Area/BS	AreaOfs
8	O-XYLENE	805	815	Middle	11 * X	Area/BS	0

3- Method Manager



Substance table : **Power** → For AirToxic, ...



Function: $Y = A \times X^P$

Time retention window

Function used for results

3- Method Manager

On the substances table



Substances table information

Substances table name: Author:

For the analyzer serial number: Analyzer type:

Substances

#	Name	RT Min	RT Max	Select Peak	GC Result formula	With X=
1	BENZENE	52	62	Middle	X	Area/BS
2	CYCLOHEXANE	62	72	Middle	$3,8 * X^{0,88}$	Area/BS
3	TOLUENE	170	180	Middle	$1,6 * X^{0,88}$	Area/BS



- Apply a « delta » on the RT ranges : (ex : +10s)

RT delta input

Enter the delta to apply to the RTs selected



- Apply a « factor » on the original RF (ex : RF / 10)

RF factor input

Enter the factor to apply to the RFs selected

3- Method Manager

Calibration / auto-calibration substances table



Special line for auto-calibration (automatic calculation of the new BS thanks to the known standard calibration concentration)

Substances table information

Substances table name: CALIB-30 Author: Chromato-Sud

For the analyzer serial number: #22510321 Analyzer type: airmoBTX-CALIB

#	Name	RT Min	RT Max	Select Peak	GC Result formula	With X=
1	BENZENE-STD	311	321	Middle	$X / (0.0562 * [SampleVol])$	
2	BENZENE	311	321	Sum	X	Area/BS

Curve response of detector

Linear Auto-Calibration

X / Conc.

With X = Area + AreaOfs

Name	Value
Conc.	0.0562
AreaOfs	0
Average point N=	3
Min BS	3500
Max BS	5300

3 means that Base sensitivity is calculated with an average of the last three values

Alarm Window
(known concentration of the standard \pm X%)

Known concentration
of the calibration standard (mg/m^3)

3- Method Manager

Calibration / auto-calibration substances table



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Specificity for AirToxic « Auto-Cal » function :

Edit substances table

Substances table information

Substances table name: CAL-10MN Author:

For the analyzer serial number: #20010723 Analyzer type: airTOXIC-CALIB

Substances

#	Name	RT Min	RT Max	Select Peak	GC Result formula	With X=
1	BENZENE-STD	8	18	Middle	$X / (0.0584 * [SampleVol])$	Area
2	BENZENE	8	18	Sum	$1.1 * X^{0.9}$	Area/BS

Curve response of detector

Linear Auto-Calibration

X / Conc.

With X = Area + AreaOfs

Name	Value
Conc.	0.0584
AreaOfs	0
Average point N=	1
Min BS	3000
Max BS	50000

$C_{1,corr}$

An Excel file can help you to calculate the « Auto-Cal concentration » in mg/m^3 :

Calculation of $C_{1,corr}$		
$C_{1,real}$	Volume sampled during a CALIBRATION	$C_{1,corr}$
$\mu g/m^3$	ml	$\mu g/m^3$
58,41	88,51	63,06
C ppb	19,41	à 20°C

- **Base sensitivity (BS) parameter :**

On airTOXIC analyzers, VOC do not have a linear response function.

$$C = a \left(\frac{Area}{BS} \right)^b$$

a and b optimized experimentally to pass the linearity test of EN_14662-3 2015

For Benzene :

$$C = 1,1 \left(\frac{Area}{BS} \right)^{0,9}$$

4- Setup the GC



GC Configuration Editor V1.6.4

Information | General | Sampling | Injection | Column | Detector | Calibration

Analyzer

Serial Number: #20461020 Type: BTX1000

Instrument sensitivity

Base Sensitivity : 5510,00

Comments

Location: Saint Antoine

Owner: Chromato-Sud

Setup file version

Version: 8 Release: 3

Last update

Date: 07:47 08/10/2020

Distributor access - DISTRIB RealTime DataBase

Base sensitivity

4- Setup the GC



GC Configuration Editor V1.6.4

Information | General | Sampling | Injection | Column | Detector | Calibration

Temperature | Pressure

Oven Temperature on standby mode: 43,00 °C

Oven Ramp parameters: Oven ramp rate 10,00 °C/min, Oven ramp end 150,00 °C/min

Oven temperature sensor offset: Value 0,00000 °C

Oven temperature controller parameters: Proportional coeff. 10593,40039, Integral coeff. 10,10000

Temperature of the column oven when the analyzer is in standby mode

GC Configuration Editor V1.6.4

Information | General | Sampling | Injection | Column | Detector | Calibration

Acquisition | Acquisition(2) | Temperature | Pressure | Ignition | Polarization

Setup temperature of detector: Temperature 170,00 °C

Sensor temperature offset: Value 0,00000 °C

Temperature control coefficient: Proportional coeff. 5044,50000, Integral coeff. 33,80000

Temperature of the detector (or permeation oven for MEDORS analyzers)

GC Configuration Editor V1.6.4

Distributor access - DISTRIB

General | Sampling | Injection | Column | Detector | Calibration | Temperature

Temperature | Pressure

Column Pressure on standby mode: 110 Raw value (0-500)

Column pressure (PK) calibration parameters: Offset 0,00000, Factor 0,09766

Regulator pressure (PKV) calibration parameters: Offset 136,4883, Factor 0,53090

Oven pressure controller parameters: Used in voc1010 mode only, to control the pressure regulator (PKV) from the column pressure sensor(PK). ☐ Enabled, Proportional coeff. 0,09000, Integral coeff. -0,05000

Distributor access - DISTRIB RealTime DataBase

Control of piezo valve

Preset values for pressure regulators

GC Configuration Editor V1.6.4

Distributor access - DISTRIB

General | Sampling | Injection | Column | Detector | Calibration | Temperature

General | Trap

Loop volume: Volume 0,000 ml, Set 0 for trap operation, ☒ Use sampling volume in standards calculations

Flow jet calibration coefficients: Normal flow jet: Offset 120,78790, Factor 0,02200; Large flow jet: Offset 0,00000, Factor 0,06000

Ambient pressure calibration coefficients: Ambient Air Set 0, Raw value (0-500); Offset 129,97549, Factor 0,59990

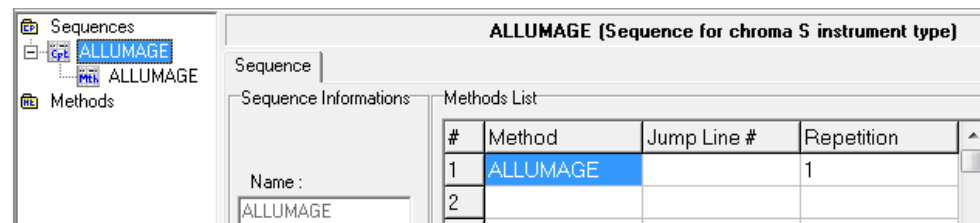
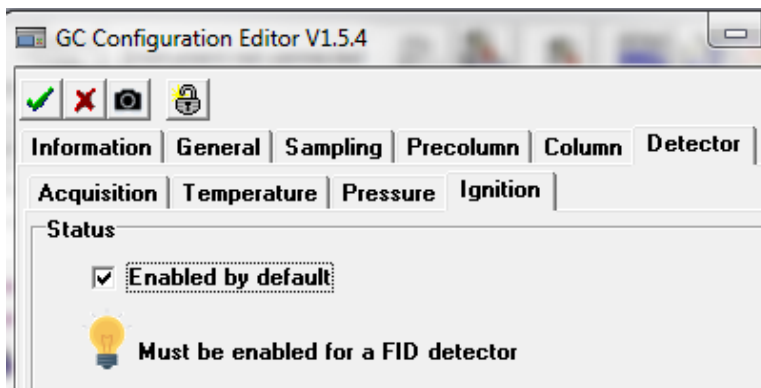
Vacuum pressure calibration coefficients: Offset 0,00000, Factor 1,10000

Distributor access - DISTRIB RealTime DataBase

For the ChromaS

Specific case

- Automatic ignition of the flame of the ChromaS since Vistachrom 1.5.7



- ✓ No need to be on site to press on buttons
- ✓ Ignition is possible remotely (using TeamViewer)

5- Soft configuration



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Error list

Available in user manual

Soft Configuration

Global | Files | Errors | Units | Group

Global

At the end of analyze

☐ Wait second analyse.

☐ Display results dialog

☒ Send results to main window

Timeout on results : 150 % of cycle time

Analyzer options

☐ Tube Drum ☒ Trap

Instrument clock synchronization

☒ Auto-synchronization at method end

At shutdown

☐ Immediate stop GC

Cancel OK

Soft Configuration

Global | Files | Errors | Units | Group

Files

☒ Save .Chrom files

☒ Save .Trend files

☒ Save .ASC files

Naming type : Sample Date+Method

☒ "Tab" instead of "."

Default value

Concentration : 0.00

Area : 0.0

Retention Time : 0.00

Volume : 0.00

Cancel OK

Soft Configuration

Global | Files | Errors | Units | Group

Errors

General

Error hold time 10 s ☒ Stop on Error Enabled

Filter : Valid Errors

Stop Errors

0114-During on-line mode, ring buffer for chr...
0115-Ring buffer for chromatography data is...
0123-Power fails during method processing.
0146-Overflow of the on-line command buffer
0224-Temperature sensor of the oven failed.
0225-Temperature sensor of the detector fai...
0227-Pressure at the critical orifice is out of r...
0231-Column pressure is below 50 hPa. Che...
0241-During concept processing a call for a...
0242-The oven heater remained at maximu...
0243-The detector heater remained at maxim...
0247-No peaks found during integration. Cou...
0250-The temporary licence has expired.

Cancel OK

Units of results

GC unit (mg/m³ for sample loops and ng for traps)

Soft Configuration

Global | Files | Errors | Units | Group

Units

Unit type	Factory unit	Display and Output unit
Results	ng	ppb(v)
Temperature	Celcius (°C)	Celcius (°C)
Pressure	hecto-Pascal (hPa)	hecto-Pascal (hPa)

Cancel OK

Name of the group

Composition of the group

Soft Configuration

Global | Files | Errors | Units | Group

Groups

Name	Method	Unit
TRS	AIR201-1	µg/m³
TRS	AIR201-2	µg/m³
TRS	AIR201-3	µg/m³
TRS	AIR202-1	µg/m³
TRS	AIR202-2	µg/m³
TRS	AIR202-3	µg/m³
TRS	AIR203-1	µg/m³
TRS	AIR203-2	µg/m³

Substances

Substance	Factor
DMDS	1
H2S	1
METHYL-SH	1
DES	1

Name TRS

Method AIR201-1

Unit µg/m³

Substance DMDS

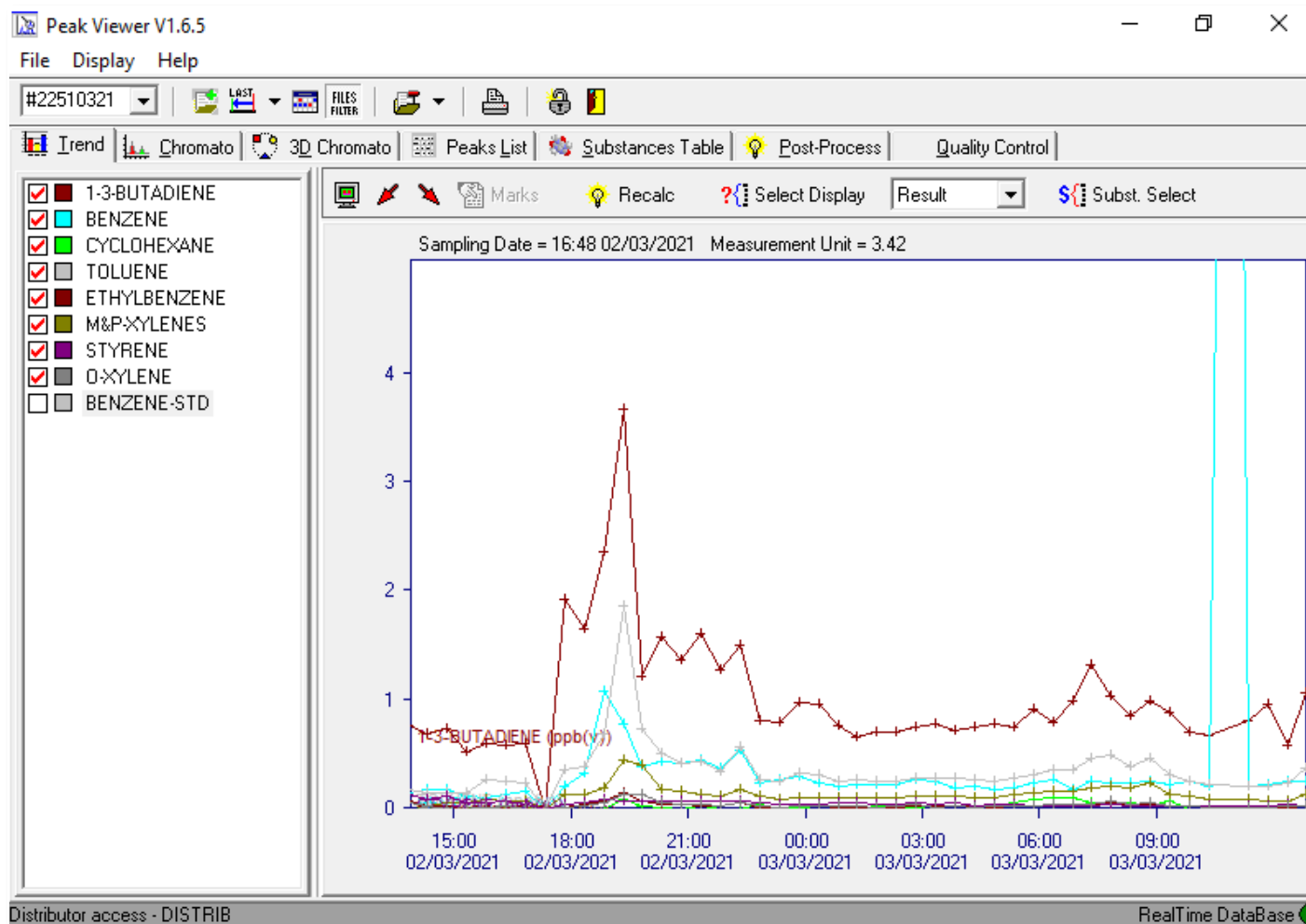
Factor 1.000

Cancel OK

6- Peak Viewer



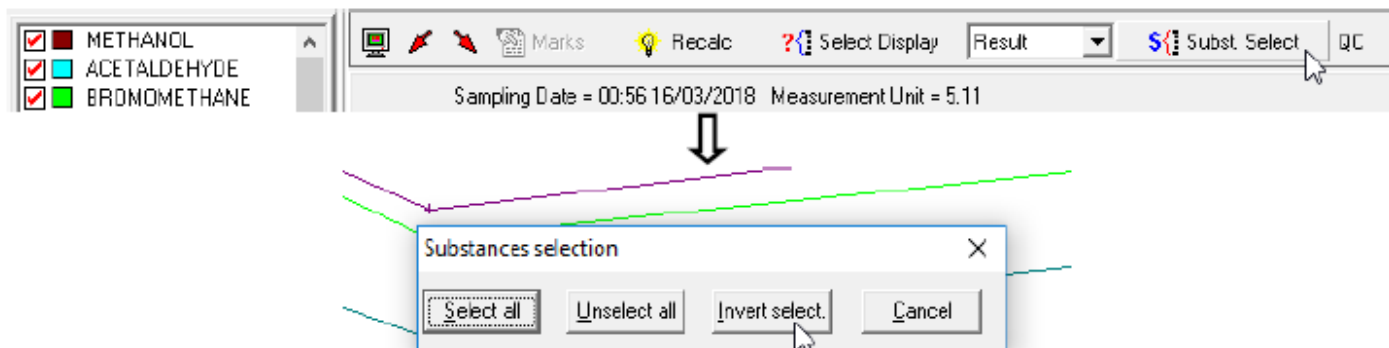
- Trend function (follow a parameter during the time)



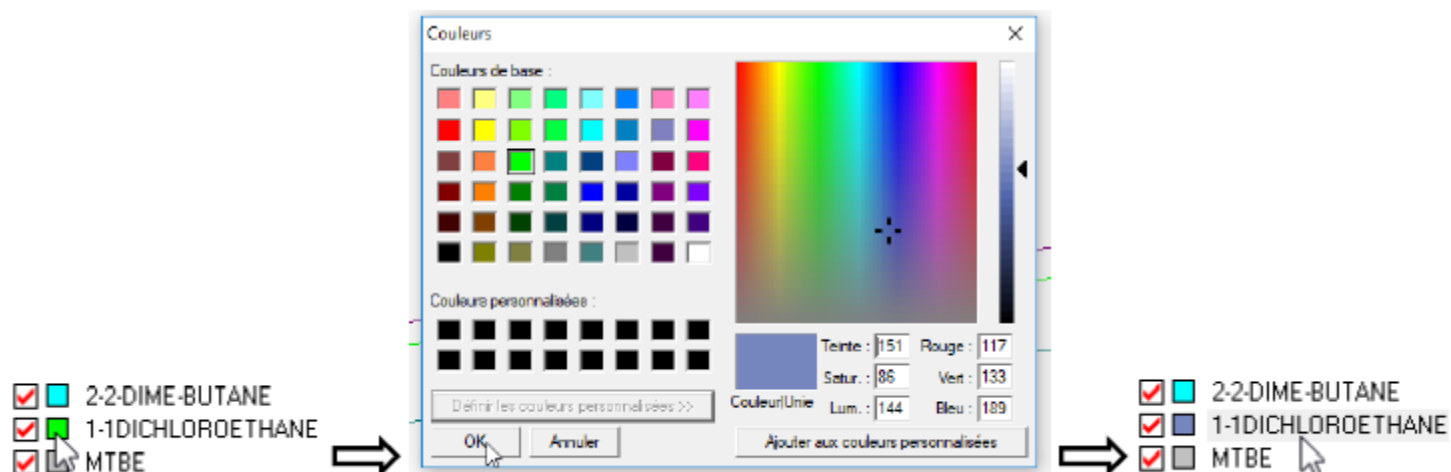
6- PeakViewer



- To play more easily with a lot of molecules: « Trend »



- Optimize the color for each molecule: « Trend »



6- Peak Viewer



- **Chromato function**

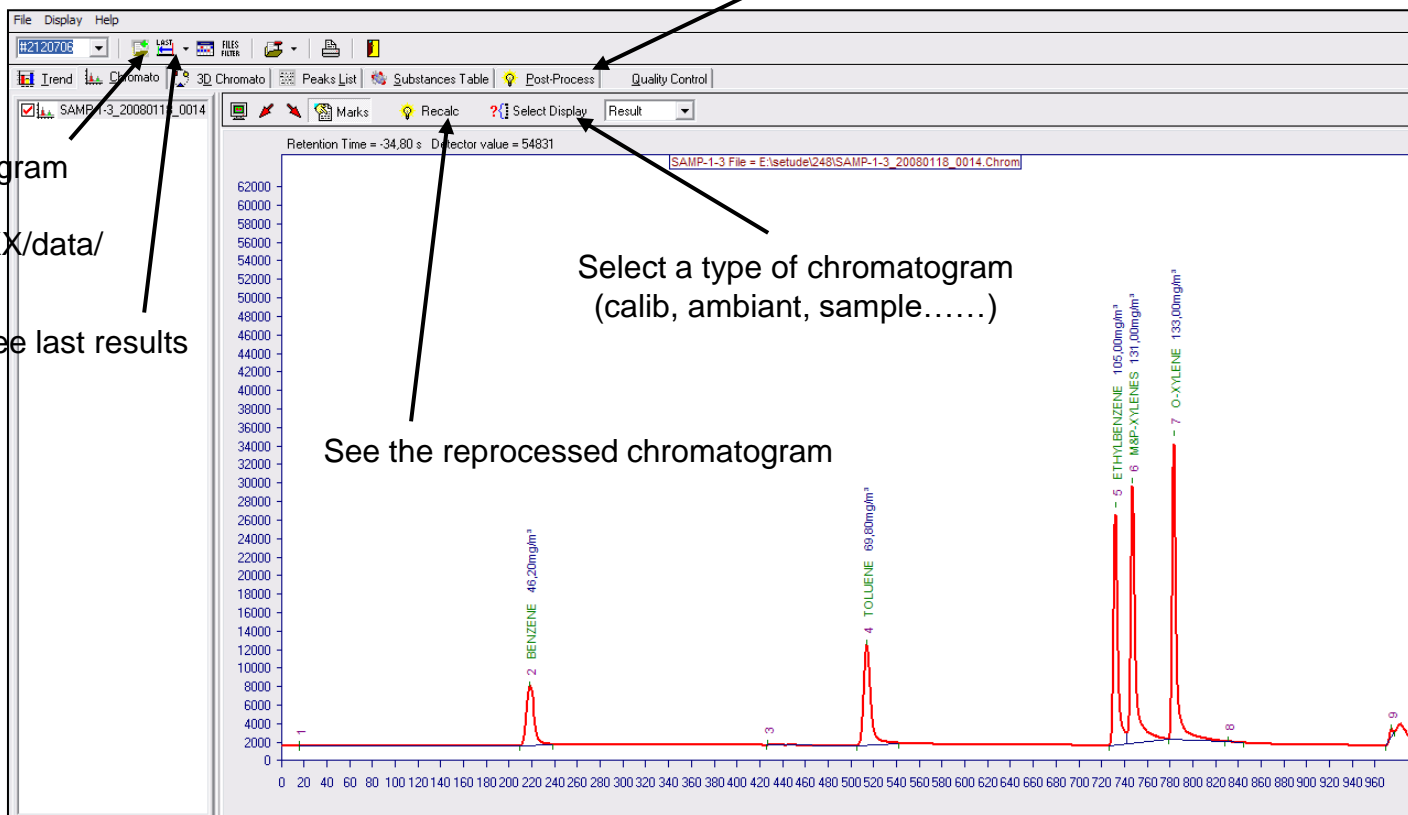
Reprocess chromatograms (integration, Base Sensitivity, retention time, identification...)

Open a chromatogram
(located into
D:\Data\#XXXXXXX\data/
YYYY/MM/DD)

See last results

Select a type of chromatogram
(calib, ambient, sample.....)

See the reprocessed chromatogram

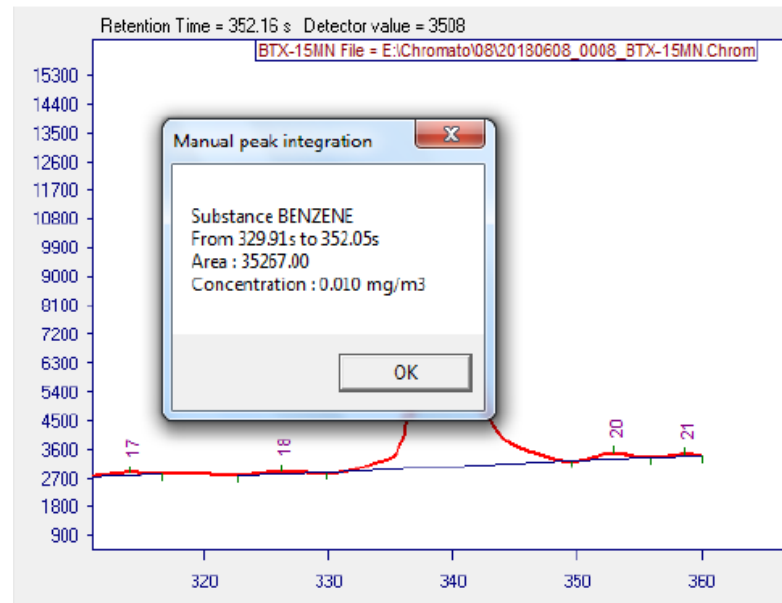


6- PeakViewer

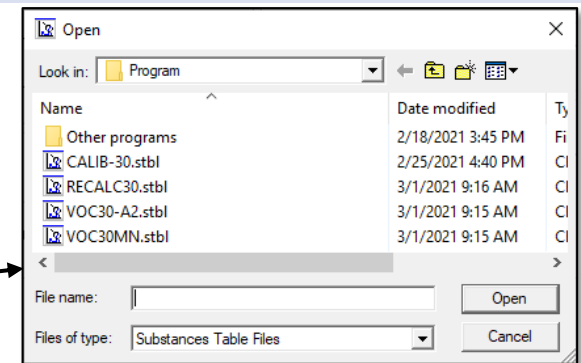


Manual integration:

- On the tab « chromato »
- Use « CTRL » + « left click » to select the beginning of the peak
- Release the « left click » to select the end of the peak

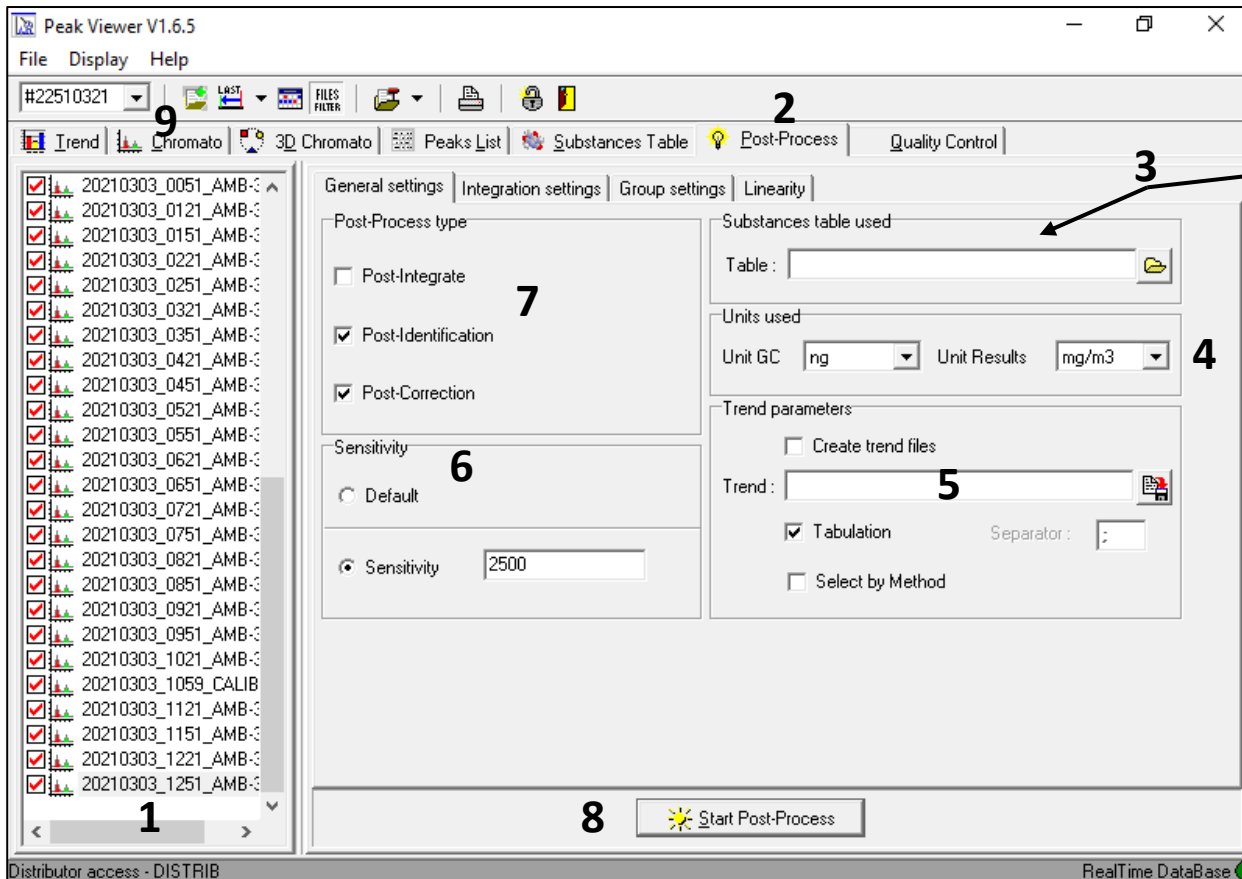


6- Peak Viewer



• Post process function

- 1) Select chromatograms you want to reprocess
- 2) Select Post process tab
- 3) Select the substances table
- 4) Select the unit of your BS (ng for trap or mg/m³ for loop) and of your results
- 5) Create ASCII files
- 6) Give a BS value
- 7) Retreatment functions
- 8) Click on Start Process
- 9) Select Chromato tab and click on « Recalc » to see the chromatogram post calculated.



Example : Post process

On BTEX results

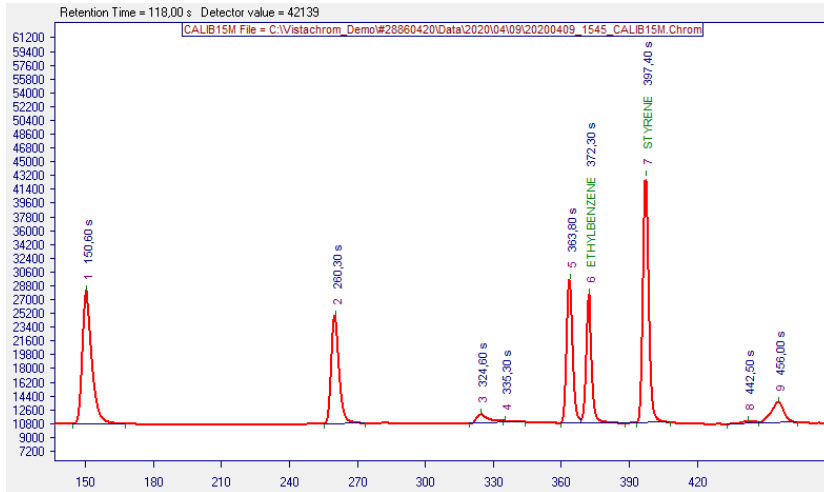


Post-Process



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- My results on external standard are 0. What should I do ?
- Open Peak Viewer and load a calibration chromatogram
Peak are not well identified



Example of benzene (1st peak) : RT=150s
The RT window should be **145-155 seconds**.
We have to adjust the RT : **-12s**.

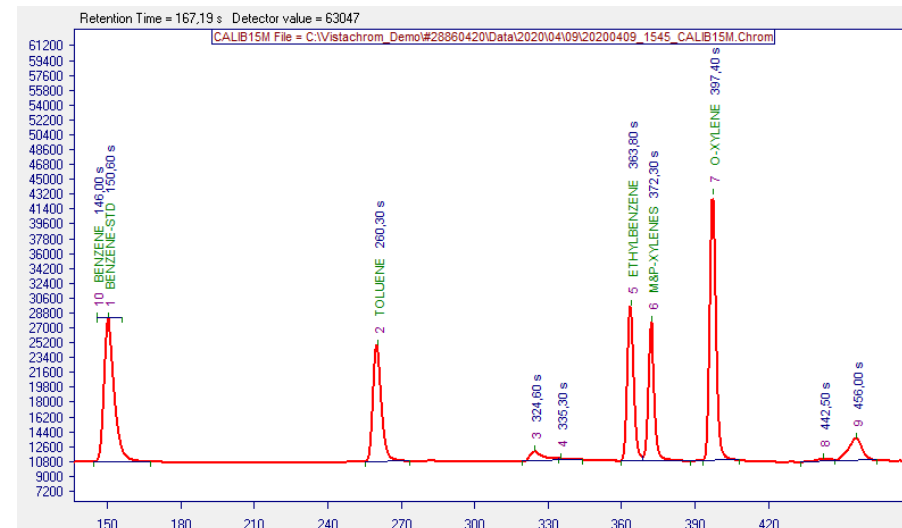
- Open the substance table associated
Change the RT to have the substance in the middle of the RT window

Substances table information

Substances table name: Author: Chromato-Sud

For the analyzer serial number: Analyzer type:

#	Name	RT Min	RT Max	Select Peak	GC Result formula	With X=
1	BENZENE	157	167	Middle	X	Area/BS
2	CYCLOHEXANE	167	177	Middle	1,1 *X	Area/BS
3	TOLUENE	266	276	Middle	1,05 *X	Area/BS
4	ETHYLBENZENE	369	379	Middle	1,1 *X	Area/BS
5	M&P-XYLENES	378	388	Middle	1,1 *X	Area/BS
6	STYRENE	396	404	Middle	1,1 *X	Area/BS
7	O-XYLENE	404	412	Middle	1,1 *X	Area/BS



Peaks integration

Integration parameters



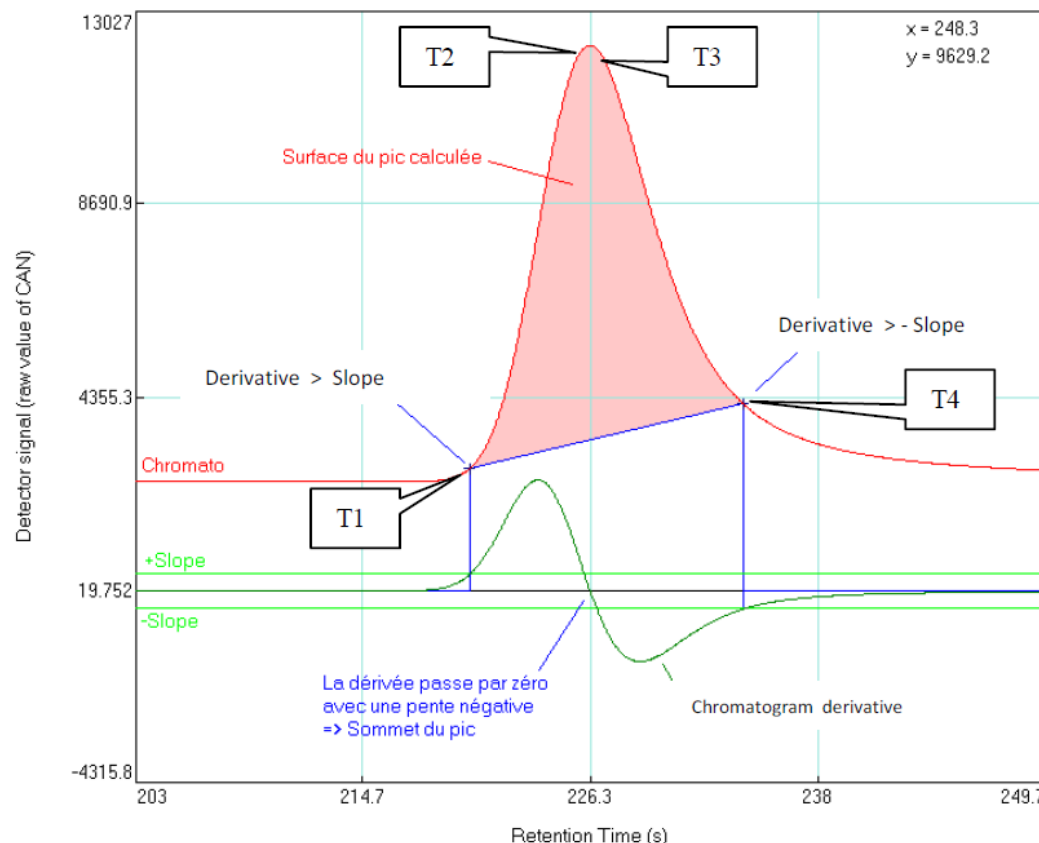
Integration parameters listed in each method:

Integration Slope Signal unit/s Min Area Surface unit Drift Signal unit/s

“Slope” :

Detection of :

- Peak beginning
- Peak Summit
- Peak end



Phase 1 :	derivative \geq Slope	→	beginning of the peak	T1
Phase 2:	derivative < Slope	→	beginning of the peak summit	T2
Phase 3:	derivative < -(Slope)	→	beginning of the peak descent	T3
Phase 4:	derivative > -(Slope)	→	end of the peak	T4

Peaks integration

Integration parameters



Online Gas and Liquid Analyzer Experts

Integration parameters listed in each method:

Integration	Slope	5.00	Signal unit/s	Min Area	25.00	Surface unit	Drift	5.00	Signal unit/s
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“min Area” :

To do the difference between “Signal noise” and a “real chromatographic peak”:

- Determined depending on the concentration range studied on the instrument
- Using Chromatotec experience
- LDL results calculations matching with other “reference methods” : USEPA, NPL, ...

Peaks integration

Integration parameters



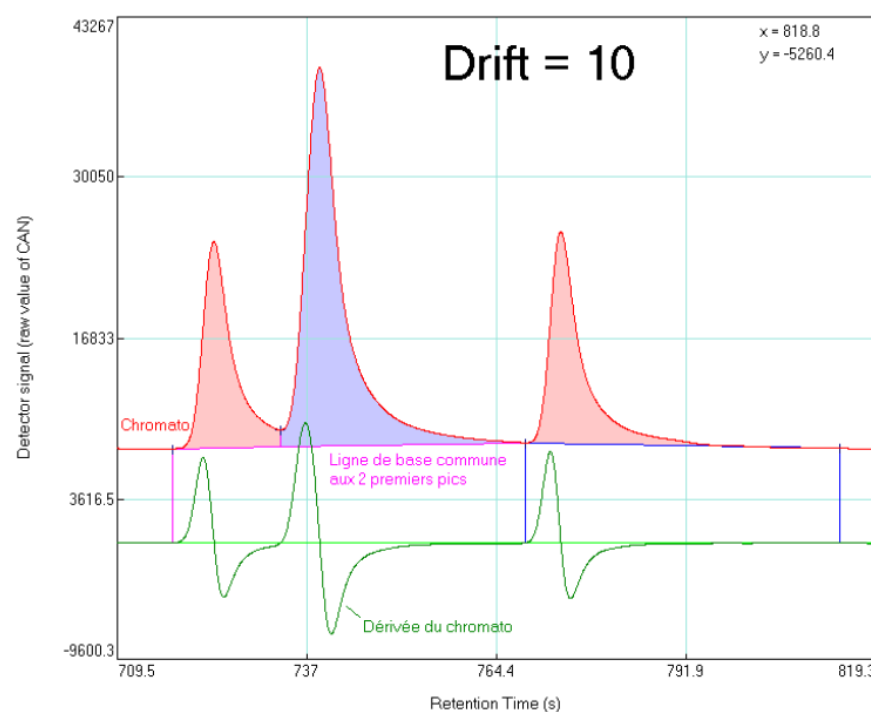
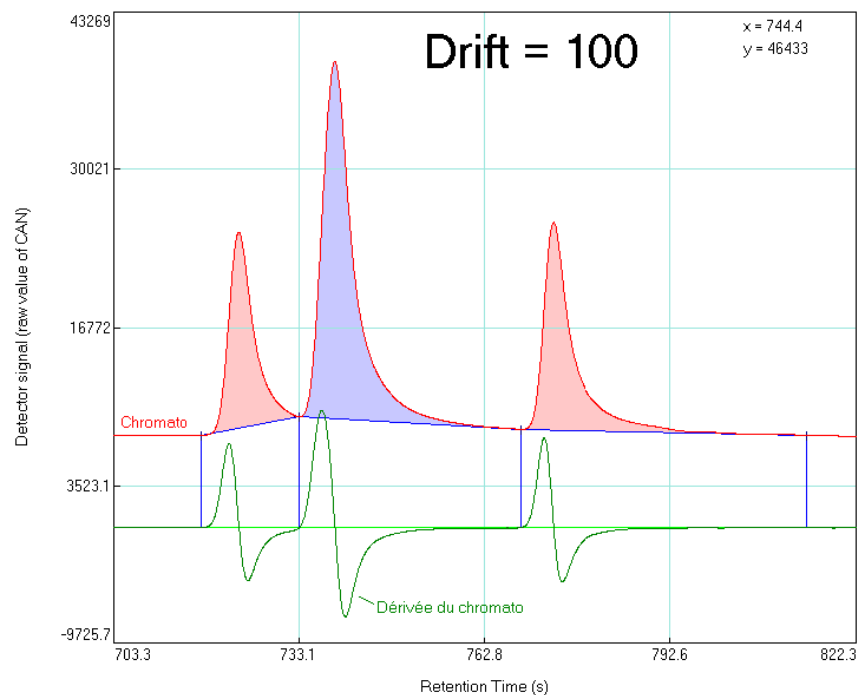
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Integration parameters listed in each method:




“Drift” :

To draw the “integration line” between two narrow peaks.



7- Unit manager

 UnitManager_1_6.exe



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Unit Manager V1.6.5

Units: Molecular Weight

Molar volume
24.04 dm³ at 20 C°

Molecular Mass

Molecular name
1112TetraCL-ETHAN

Molecular mass
167.85 g

Add

Del

- 1112TetraCL-ETHAN
- 111-TriCL-ETHANE
- 1122TetraCL-ETHAN
- 112-TriCL-ETHANE
- 1-1DICHLOROETHANE
- 1-1DICHLOROETHENE
- 1-1-DICL-PROPENE
- 123-TMB
- 123-TriCL-BENZENE
- 123TriCL-PROPANE
- 124-TMB
- 124-TriCL-BENZENE
- 12DIBR-3CL-PROPAN
- 1-2DIBROMOETHANE
- 1-2DICHLOROETHANE
- 1-2-DICL-BENZENE
- 1-2-DICL-PROPANE
- 135-TMB
- 1-3-BUTADIENE
- 13DIBR-3CL-PROPAN

D:\Application\Vistachrom\UnitManager

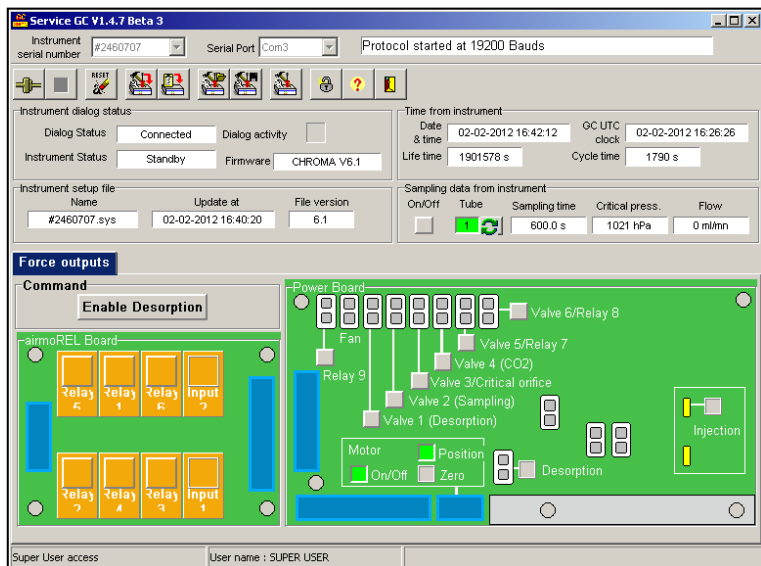
8- Service GC

ServiceGC_1_6.exe



Online Gas and Liquid Analyzer Experts

Before

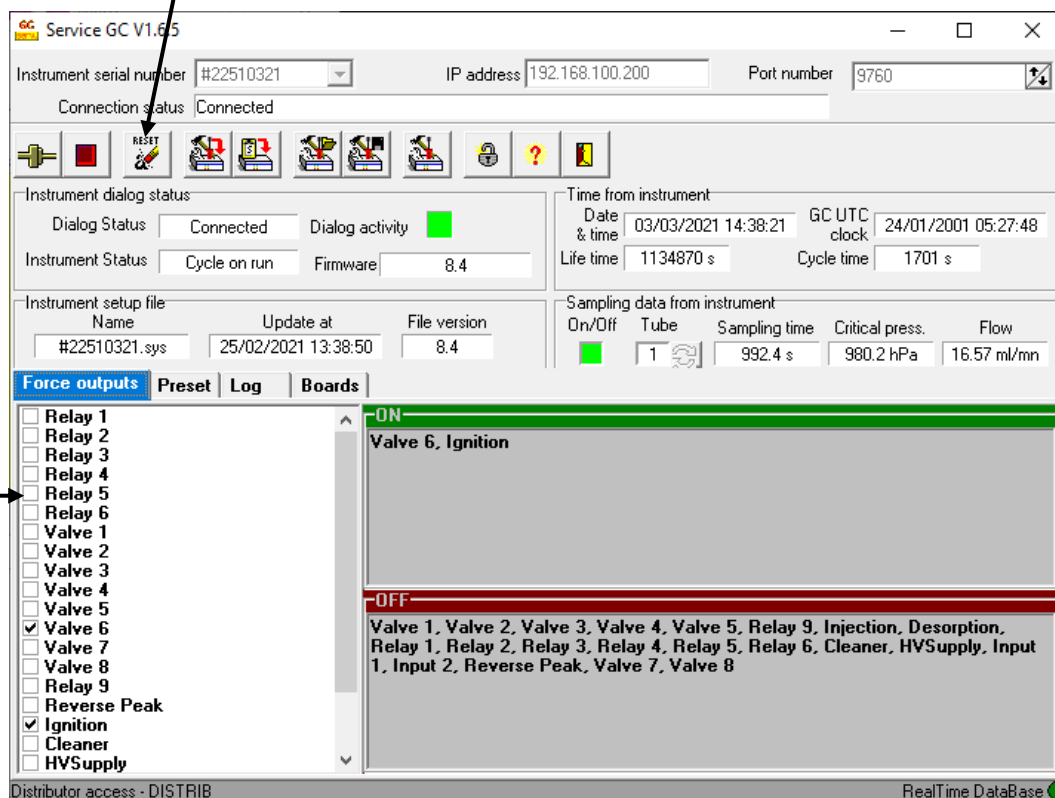


Control the relays and valves of the analyzer

Service GC manual available in User Manual

Reset of analyzer

After

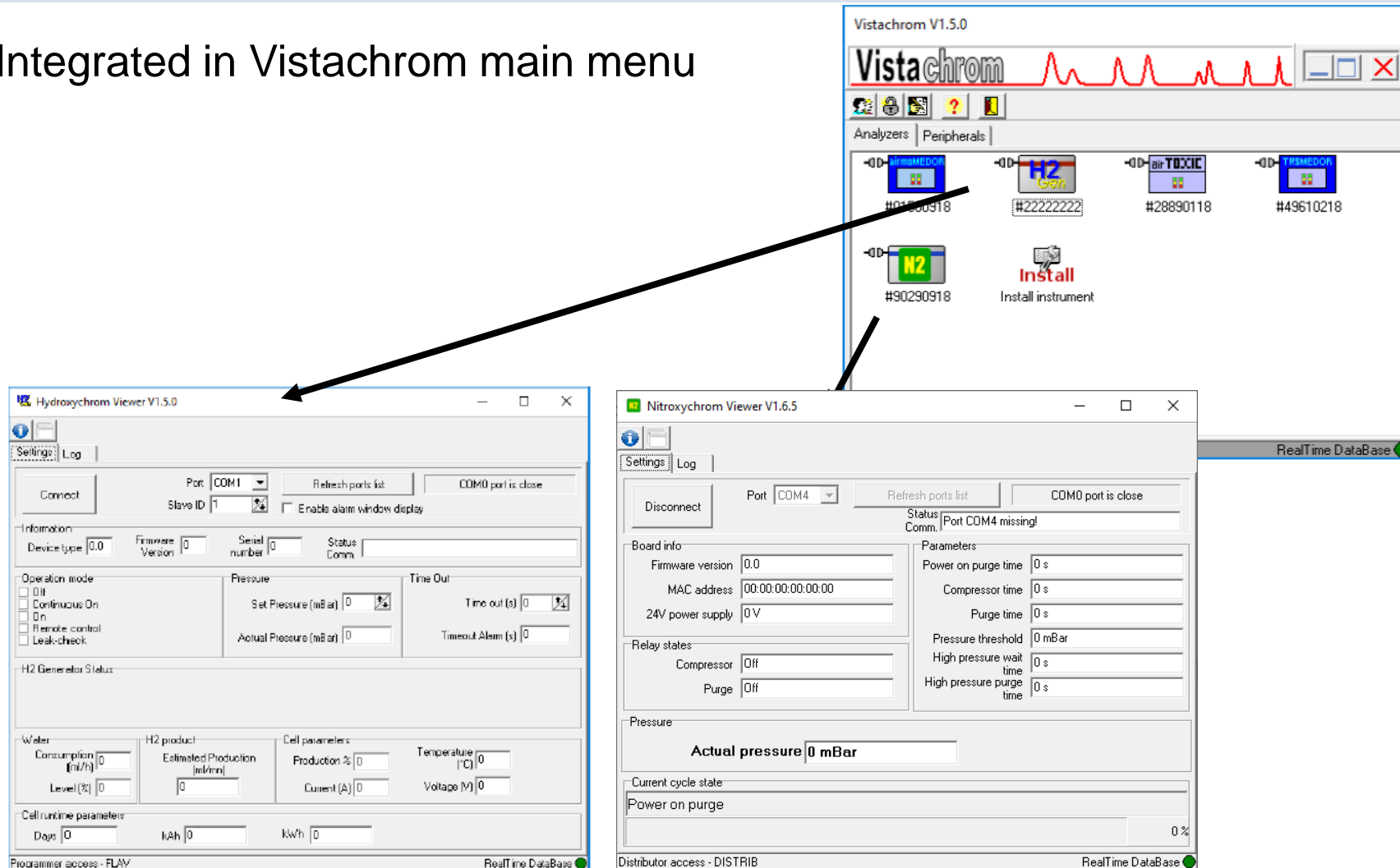


D:\Application\Vistachrom\ServiceGC

9- Generators

Since 2020

- Integrated in Vistachrom main menu



9- Generators

Since 2020

- **Parameters related to the generators are available :**
 - ✓ Remotely (using TeamViewer)
 - ✓ Operating parameters are available in the RTDB :
 - ✓ transfert via Modbus possible
 - ✓ Alarms can be defined from Vistachrom
 - ✓ Automatic « auto-restart » of the software after a power shutdown

10- Communication drivers

Modbus

Modbus data transfert via

- RTU : Serial Port (COM)
- or TCP-IP : Ethernet cable

Vistachrom driver
Reduce Ready on Com 1

ModBus / JBus Driver

Mapping Setup & Log
Slave 1

Ini file name D:\Vistachrom\MJBus_Driver\MBUS_BTEx_CYCLOHEXANE_STYRENE.INI

Address	Label	Value	Type	Size	Source parameter
17	Sampling Second	0	Word	1	#22690124, *, (Calib)
60	Life #22690124	45168	Long	2	#22690124.LifeSignal
62	ResultsCount #226	0	Word	1	#22690124.ResultsCount
80	Command	00000000	32b register	2	#22690124
82	Status	00001003 00000000	64b register	4	#22690124
86	Default	00000000	32b register	2	#22690124
100	BENZENE Result	1359 [E-2] ppb(v)	Word	1	#22690124, *, (Normal)
101	TOLUENE Result	36 [E-2] ppb(v)	Word	1	#22690124, *, (Normal)
102	ETHYLBENZENE Result	6 [E-2] ppb(v)	Word	1	#22690124, *, (Normal)
103	M&PXYLENES Result	21 [E-2] ppb(v)	Word	1	#22690124, *, (Normal)
104	OXYLENE Result	9 [E-2] ppb(v)	Word	1	#22690124, *, (Normal)
105	STYRENE Result	0 [E-2] ppb(v)	Word	1	#22690124, *, (Normal)
106	CYCLOHEXANE Result	0 [E-2] ppb(v)	Word	1	#22690124, *, (Normal)

Vistachrom V1.6.7
Vistachrom
Analyzers Peripherals

ON fx MATH

ON fx MATH

ON MOD BUS

Add driver

RTDS

Math Module Oven and pr...

Math Module Hydroxychr...

MJBus Driver JBUS ATMO

Add driver

RealTime DataBase

10- Communication drivers

Analog Outputs : 4-20 mA outputs

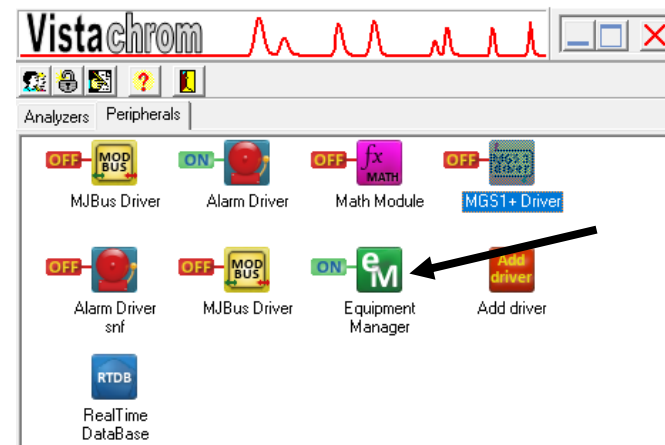
Data transfert via

- 4-20 mA outputs
- 0-10 V outputs

One module



→ 4 outputs available



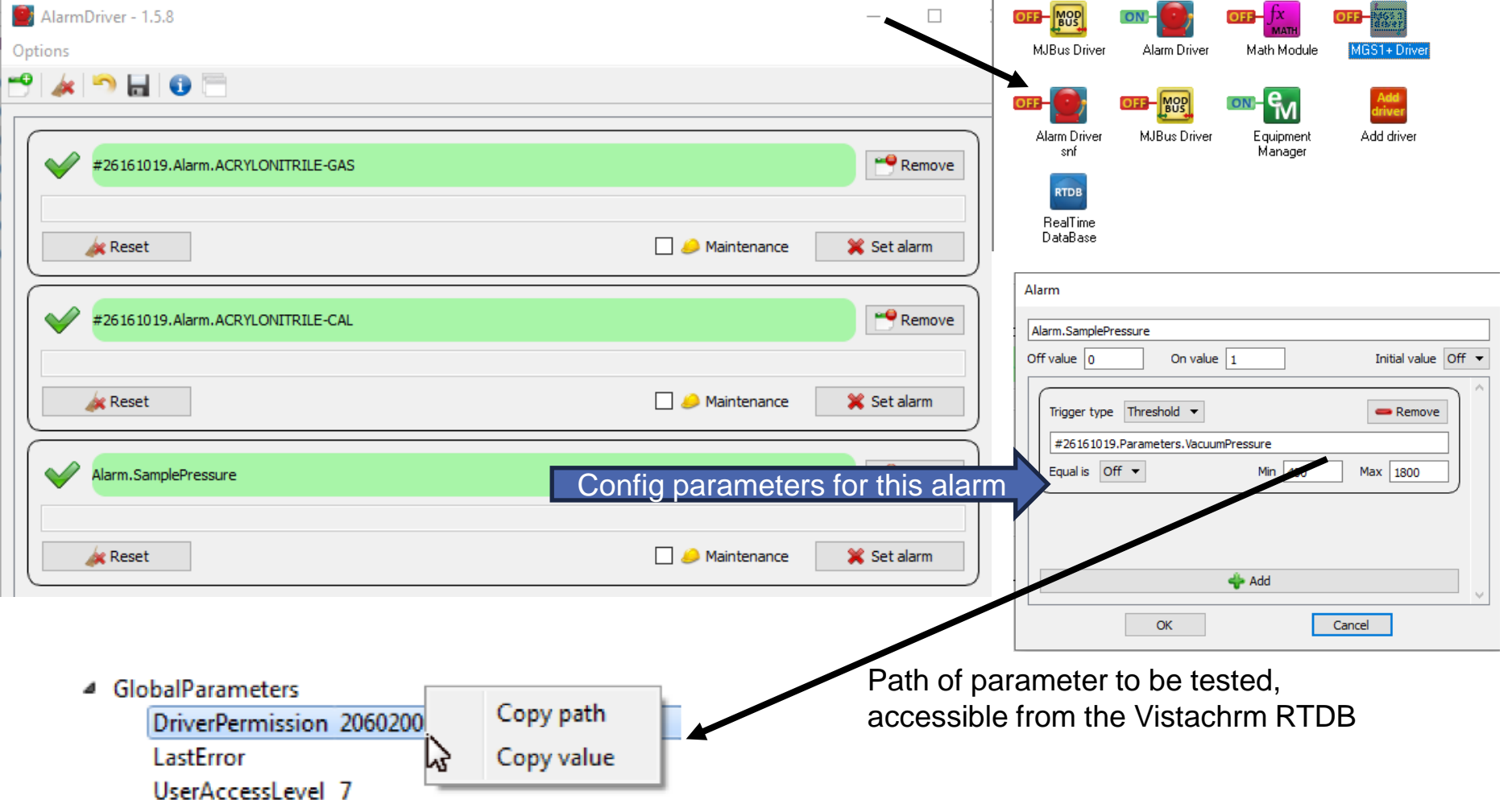
Example of configuration on a AirmoBTX with one module :

Molecule	Concentration range (ppb)	Current range (mA)
Benzene	0 → 100 ppb	4 → 20 mA
Toluene	0 → 100 ppb	4 → 20mA
EthylBenzene	0 → 100 ppb	4 → 20 mA
Xylenes (sum)	0 → 100 ppb	4 → 20mA

10- Communication drivers

Alarm driver

- Software module to check alarm detections easily :



The image shows the AlarmDriver - 1.5.8 software interface. The main window displays a list of alarms with their status (green checkmark for active) and configuration options (Reset, Maintenance, Set alarm). The first two alarms are for ACRYLONITRILE-GAS and ACRYLONITRILE-CAL. The third alarm is for Alarm.SamplePressure. A blue arrow points from the Alarm.SamplePressure entry to the Vistachrom RTDB configuration window. The Vistachrom RTDB window shows the configuration for the Alarm.SamplePressure alarm, including the trigger type (Threshold) and the parameter path (#26161019.Parameters.VacuumPressure). A blue arrow points from the parameter path to the GlobalParameters list in the bottom left corner. The GlobalParameters list shows DriverPermission 2060200, LastError, and UserAccessLevel 7. A context menu is open over the DriverPermission value, showing options to Copy path and Copy value. A blue arrow points from the context menu to the text 'Path of parameter to be tested, accessible from the Vistachrom RTDB'.

Options

#26161019.Alarm.ACRYLONITRILE-GAS Remove

Reset Maintenance Set alarm

#26161019.Alarm.ACRYLONITRILE-CAL Remove

Reset Maintenance Set alarm

Alarm.SamplePressure Remove

Reset Maintenance Set alarm

Config parameters for this alarm

Alarm

Alarm.SamplePressure

Off value 0 On value 1 Initial value Off

Trigger type Threshold Remove

#26161019.Parameters.VacuumPressure

Equal is Off Min Max 1800

Add

OK Cancel

GlobalParameters

DriverPermission 2060200 Copy path Copy value

LastError




UserAccessLevel 7

Path of parameter to be tested, accessible from the Vistachrom RTDB

10- Communication drivers

Alarm driver

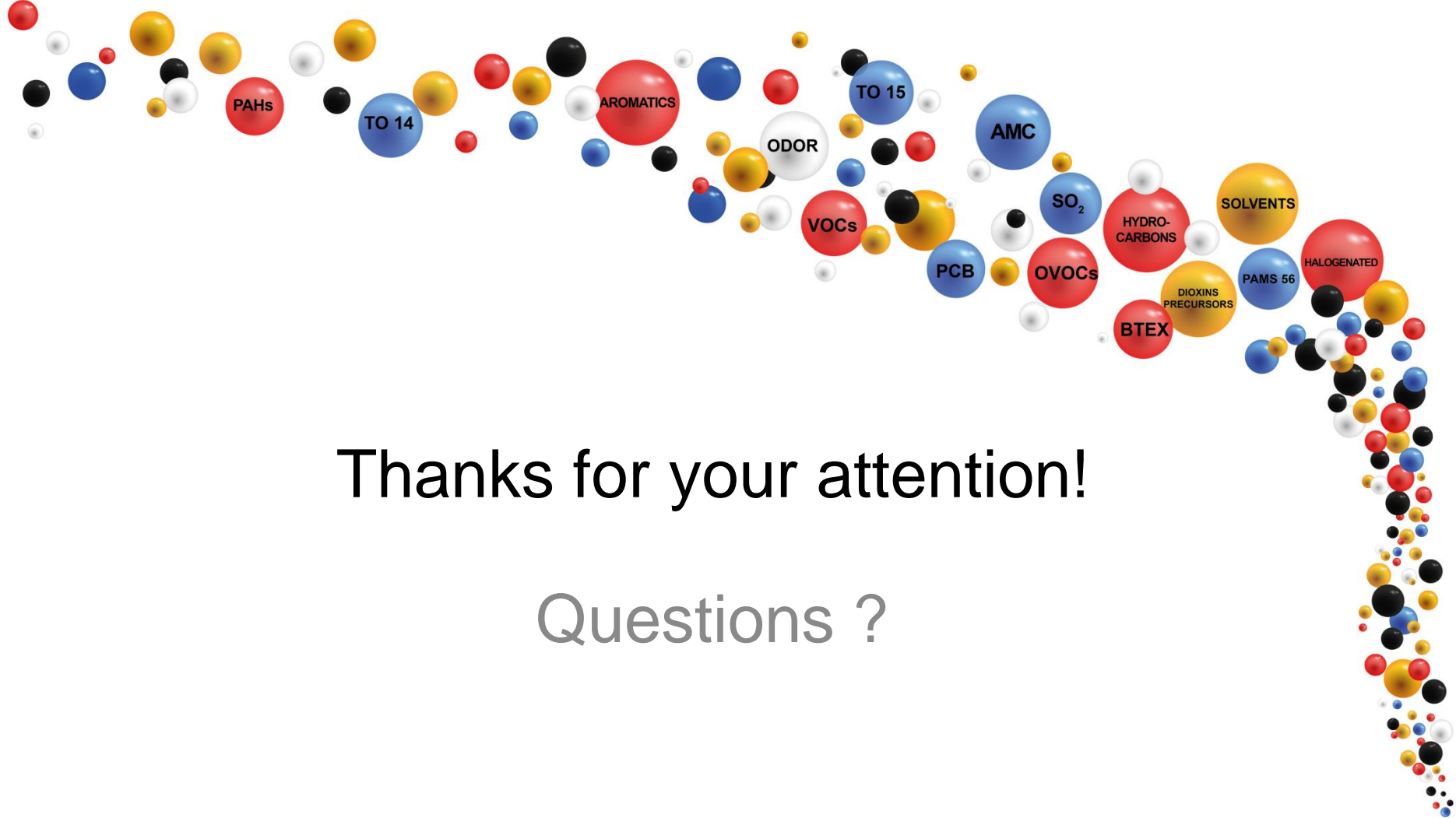
- Software module to check alarm detections easily :

Off =  #11111018.Default / On =  #11111018.Default / Maintenance =  #11111018.Default

- Plenty of alarms can be monitored :
 - Detection of a plugged sample line
 - Detection of carrier gas pressure drop
 - Detection of abnormal temperature in a shelter
 - Follow up of the Hydroxychrom operating parameters : i electrolysis, U electrolysis, ...
 - Detection of a high concentration of monitored compound / group of compounds
 - ...
- All alarms triggers are listed in a « log » file :

20230627_AlarmEvent.log - Bloc-notes

Date	Alarm	Event
2023/06/27 04:27:26	#23140621.Alarm.DefaultMajeur	Below the minimum value (500) for #23140621.Results.*.VALIDA1.Substances.BENZENE.Result : 117.839
2023/06/27 08:32:46	#23140621.Alarm.DefaultMajeur	Status registry indicates that analyzer #23140621 is not running or logoned
2023/06/27 08:32:46	#23140621.Alarm.DefaultMajeur	Status registry indicates that analyzer #23140621 is not running or logoned
2023/06/27 08:48:40	#23140621.Alarm.DefaultMajeur	Status registry indicates that analyzer #23140621 is not running or logoned
2023/06/27 08:48:41	#23140621.Alarm.DefaultMineur	Below the minimum value (5) for #23140621.Parameters.InternalTemperature : 0



Thanks for your attention!

Questions ?